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Pastoral Development Projects

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Sequel to Workshop Synthesis (Bulletin 8)

The design and implementation of pastoral development projects for tropical Africa

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Learning from the experience

Stephen Sandford

In order to make the most appropriate use of pastoral development experience to improve the design and implementation of future interventions, it is necessary to devise a method of interpretation which is more precise than either an overly simplified approach or a detailed taxonomy of experiential data which obscures pattern. To this end, past experience should be analysed systematically, in a way which discerns patterns of behaviour common to all pastoral projects.

A systematic approach to analysing previous experience involves categorizing the main factors which are present in all pastoral development situations, and examining the relationship between them. In pastoral projects, the most influential factors, appear to be: **immutable characteristics,** whether physical, political, social, economic or administrative, of the situation which is the object of intervention; **objectives and ambitions** of those involved in the project; **components,** the distinct and separable innovative techniques or assistance interventions which the project seeks to introduce; and **forms of organization and management** of these components. These organizational forms can be distinguished according to (a) type of organization controlling and carrying out a particular function, (b) extent of centralization, or decentralization of functions within a given organization, and (c) management style, whether authoritarian, contractual, or permissive.

This categorization of influential factors should help to establish a fairly routine procedure for providing a classification of behaviour which includes only the most critical variables, and which can be used by the individual planner/manager to interpret his particular experience. Examination of the interaction between crucial factors can help to determine whether the project framework will be the most useful way of organizing pastoral development in any given situation. This is demonstrated by means of an example illustrating the circumstances in which projects have desirable or undesirable effects.

The method proposed is an attempt to deal with the limitations of a prescriptive approach to planning by helping the planner/manager to visualize his problems and options without giving him precise directions. As such, it acknowledges that planning and management decisions must ultimately be made on the basis of a combination of intuition and detailed understanding of the local scene, rather than according to a categorical set of directions based on knowledge of precedents established elsewhere.

Discussion

Planning and evaluation of pastoral projects is seriously handicapped by the fact that there is far too little relevant factual information on both the experience of past projects and on the complex pastoral systems themselves, with the result that decision-making models are sorely lacking. A systematic approach to analysing experience (such as the categorization proposed in the paper), which allows identification of traits common to all projects, is undeniably more useful for project design than case studies. The suggested classification of management styles is helpful in describing not only the operation of the project but the role of the pastoral producer therein. At the same time, the description of project framework characteristics helps to avoid meaningless taxonomy (although "immutable characteristics" might be more appropriately described as

"situational aspects", since development assumes that circumstances are capable of change). Other categories of factors could be included, such as "adequacy of preparation" (including availability of information, and interaction factors between producers and implementers); similarly, "objectives and ambitions" might also include associated "assumptions", particularly as these refer to donor aspirations.

Projects must be examined within a wider field of view, however. As the author has recognized, a generalized descriptive approach has its own limits as a means of providing guidance for action, since it does not obviate the need to acquire facts relevant to decision making and to incorporate such evidence in guidelines useful to planners. The lessons of past experience should offer prospects for improving the organization and management of both projects and pastoral production systems, and what is needed is a simple and straightforward methodology which can be used at several decision-making levels to help realize these improvements.

Perhaps the most significant lesson to be drawn from pastoral development experience is that the project approach is too often poorly adapted to the circumstances in which pastoral production occurs. Conceived in a relatively rigid fashion, projects are more effective in predictable circumstances. The project framework is appropriate in areas which lack intervention experience, or where the political relationship between pastoralists and government is tenuous, but it becomes less suitable where the natural environment is arduous and unreliable, or where the central coordination is weak, and these circumstances are particularly prevalent in African countries.

Moreover, projects are seriously limited in having their objectives determined more by donor requirements than by the needs of the pastoral producer. Projects so designed are overly ambitious; timing constraints imposed by financial considerations render their planned duration completely unrealistic. In reality, procurement of personnel and equipment is unduly delayed, and overseas training further retards implementation, so that intervention does not begin to become effective until the time allowed for completion comes to an end. Projects should be planned with open-ended objectives, should extend over a period of 10–20 years, and should be allowed to unfold in an evolutionary process in which inputs are provided progressively as the need occurs.

Basic constraints to pastoral development

Economic objectives in pastoral projects

Hans Ruthenberg[1]

1. It is with deep regret that we learnt of the sudden death of Professor Ruthenberg shortly before this text went to press.

In the planning and evaluation of pastoral projects, two sets of objectives must be taken into consideration: the national objectives, usually expressed as "the common good", which must be formulated and quantified into specific targets; and the pastoralist

objectives, which must be met if their participation in the project is to be expected and if national objectives are to be realized. While projects will have the greatest chance of success where these objectives coincide, it cannot be assumed that harmony of objectives exists between nation and individuals. Most pastoral projects combine complementary and conflicting aims, and the challenge in planning is to establish a structure of objectives which is both acceptable in national terms and sufficiently attractive to obtain pastoralist support.

In African countries, the national objectives are improvement in output and income, increase in employment, improvement in the balance of payments, alleviation of poverty, and resource conservation. In general, pastoral projects cannot be justified in terms of the first three objectives. In conditions prevalent in Africa (rapid population growth and consequent scarcity and abuse of cropland), wherever arable and pastoral producers compete for land, national policy favours arable cultivators, since agricultural crop output is more economic in national terms. Consequently, pastoral projects which claim land which could otherwise be cropped cannot be expected to receive comparable support, so that pastoralism is unlikely to make a substantial contribution to increased livestock output, except in certain semi-humid areas of West and central Africa. At best, pastoral projects may expect to prevent decline and variation in output, and will generally have to be justified by estimates of decline in output, income, and welfare that would occur without them.

Pastoral projects also contribute poorly to national employment objectives. In fact, by replacing traditional labour patterns with more formal employment arrangements, which exposes the high degree of underemployment existing among pastoral peoples, they reduce the labour absorption capacity of the pastoral system and lead to social disintegration. In terms of their contribution to the balance of payments, their impact may be somewhat optimistically assessed in semi-humid areas, especially in countries which import meat, so long as the foreign exchange value of meat remains high; but in regions where there are few possibilities for substitution of imports or increase in exports of livestock products from pastoral projects, their balance of payment effect will be low if not negative.

From the national point of view, pastoral projects may be justified mainly in terms of poverty alleviation and resource conservation, the two objectives being closely interrelated. Increasingly, precious natural resources are being destroyed by growing human and livestock populations, and resource conservation is unlikely to occur among those who struggle to survive. Resource preservation also depends on utilization of modern technology, which can only be introduced when income is improved. Projects offer some hope of improving the quality of life for pastoralists, which in turn will improve the possibilities for protecting the natural resource base.

Objectives of pastoralists are, in contrast, primarily security-related because of their marginal and hazardous conditions of production. From their point of view, as individual owners of herds but collective users of pasture, it may be economic to increase herd size beyond grazing capacity. At the same time, although security can be discerned as their ultimate goal, their immediate aims, by which security may be achieved, are exceedingly difficult to describe. Pastoralist objectives, like any other, are characteristically unstable over time, but they are particularly erratic due to the changing conditions of production associated with the nomadic way of life. Furthermore, pastoral groups are not homogeneous, and their objectives may vary according to differences in herd ownership. While these diverse aims would be pursued harmoniously in traditional pastoral societies, they may be brought into conflict by projects, which tend to destroy social cohesiveness by reducing risk and freezing property distribution.

Moreover, social pressures may bring about the predominance of collective aims where individual and group interests do not coincide, resulting in ambivalent attitudes toward change, which further complicate the attempt to analyse pastoralist objectives.

Because so little is known about what pastoralists will want over time, long-term research is necessary to identify objectives actually pursued and those which may become valid with project implementation. Meanwhile, rather than attempting to formulate a consistent set of pastoralist objectives as a basis for action, it would seem more practical to base projects on comparative economics (that is, on the basis of what worked elsewhere in a similar setting), while providing a flexible structure which allows for rapid feedback and adjustment to reactions of pastoralists to projects as implemented. At the same time, an effort should be made to create awareness among pastoral peoples that public investments which are nationally important may also be beneficial to them, in ways other than by direct provision of income.

Discussion

Planning must not only distinguish between decision points and multiple objectives of decision makers, but must establish an initial coalition of common interests which will enable some degree of progress to be made from the beginning, providing at once for shifts in these overlapping interests into new combinations of aims as new priorities arise. At this stage of scarce knowledge, pastoral projects require a long-term perspective and should be simple, flexible, and low in capital input. These requirements are consistent with the conditions of pastoral production as a group population strategy which occurs at marginal levels of existence; in pastoral areas, the introduction of limited operations can produce meaningful improvements at reasonable cost.

Pastoral development intervention and its attendant cost should be evaluated in terms of ecological, social and political benefits, not simply in terms of market productivity increases. It is an over-simplification to justify the cost of a project on the basis of maximizing herd size for return in money or goods when the crucial factors are labour and grazing capacity, and the provision of an uninterrupted food supply to ensure continued survival.

A flexible design requires capable and experienced management, which is less widely available for the pastoral development field than for industry. Moreover, the need for flexibility implies uncertainties which make financing agencies reluctant to make long-term investments in pastoral projects. This need arises because existing knowledge is exceedingly limited and imprecise. Crucial facts are needed which will lead to the design of effective ways to improve the quality of pastoral life. Once this information is at hand, it will be more possible to predict project effects, and the need for flexibility will decrease. Meanwhile, it would be useful to evaluate performances of past and ongoing interventions across a wide spectrum of projects; some simplification would, of course, be assumed for an assessment of such scope. Comparative socio-organizational studies, which define the circumstances in which projects operate, measure known inputs and outputs, and identify possible causes of observed events and results, would provide much needed information. The most practical research method would be to offer alternative choices and to proceed by trial and error, adapting to observed preferences and reactions as circumstances require. Adequate monitoring procedures are indispensable for this purpose.

Natural environmental constraints

Jean-Claude Bille

In many pastoral development projects, technical interventions in the field of land reclamation have not only been limited in effectiveness but have contributed to upsetting the equilibrium of the tropical ecosystem. This has occurred both because insufficient knowledge of the environment precluded anticipation of problems which might (and did) arise as a consequence of intervention, and because unforeseen environmental incidents led to the emergence of even more serious constraints to which the planned innovation could not be readily adapted. Greater understanding of the environment would reduce the number of unexpected project effects, so that the natural resource base could be more successfully protected and its productive potential improved.

Most existing projects have been based on studies which have pointed to water shortages and the need for establishing expensive infrastructure to supply livestock watering requirements. But while improved water sources have provided access to new pastures in dry seasons, it has not been possible to restrict their utilization, so that a 10-20 km area of degradation has quickly arisen around new watering points. At the same time, the infrastructure has been difficult if not impossible to maintain. Wells of moderate capacity offer a partial solution to these control and maintenance problems by making water available in small enough quantities to prevent overstocking of the area, but they have the disadvantage of requiring considerable manpower for pumping and of being associated with social circumstances no longer of present-day relevance.

Primary productivity (i.e. grass production) problems are closely related to water supply constraints. In tropical environments, primary plant production varies with unpredictable fluctuations in the intensity and duration of rainfall from year to year, so that plant growth is often restricted to short intervals of time. Furthermore, nutritional levels in plants are severely reduced during dry seasons. The effects of these limitations on animal nutrition are to some extent offset by supplementation with browse plants, leguminous bushes, and trees, but intake of such material has so far been too restricted to allow existing weight maintenance, much less growth, its main usefulness being the prevention of starvation. Greater understanding of the value of browse (digestibility, nutritional potential, and quantity consumed) would enable preplanning studies to specify more accurately the number of browse plants required per unit of stocking area, so that dry-season nutritional requirements could be better satisfied.

The equilibrium of the tropical ecosystem results from so many variables that it is often impossible to tell which parameter is the most crucial for its maintenance. This is the most complex and least understood of the problems associated with tropical plant production. In development projects in four areas of Africa (the Ferlo desert in Senegal, the Adamaoua area of central Africa, Ubangi Province in Zaire, and the grazing block territories of Kenya), interventions aimed at removing identified environmental constraints by altering the prevailing water and/or vegetation pattern resulted in a resource imbalance which led to further environmental deterioration. Certainly, problems occurring in these projects were in good measure planning failures resulting from an overly simplistic concept of environmental constraints; yet the extreme complexity and variability of environmental factors precluded the elimination of unanticipated results.

Nevertheless, while this complexity has made it exceedingly difficult to anticipate the outcome of project interventions, greater understanding of the environment would reduce the number of their unforeseen consequences and accordingly the expenditure required. To this end, the following recommendations may be made:

1. It would be useful to formulate a list of elements conducive to protection of the environment.
2. Since the suppression of one constraint often leads to the emergence of another, project interventions should be more flexibly planned to allow for rapid modification to cope with the new constraint.
3. In each situation, an environmental equilibrium exists in accordance with the limiting factor which the project seeks to eliminate. It must be recognized that intervention will bring about a new equilibrium containing a new limiting factor, which may be a social, economic, administrative or other constraint, rather than an environmental one.
4. Pre-project baseline studies on natural conditions have limited utility in predicting the consequences of eliminating the limiting factors; environmental factors are inseparable from the general project context.
5. In terms of project analysis, sound field experience should be coupled with in-depth examination of the crucial parameters. **Rain,** the chief risk element, should be studied in terms of risk and probability, the risk varying with the level of development. **Total plant productivity** should be evaluated in relation to rainfall, soil conditions and degree of utilization, and degree of constraint imposed by herd size. In analyzing **plant components** it would be more appropriate to collect and to bring wider attention to a few dominant plants than to attempt a complete botanical inventory. Finally, **vegetation zones** should be outlined in terms of their practical characteristics rather than their detailed diversification, and should include their extension, which involves mapping them.

Discussion

Water installation without the preliminary establishment of fodder reserves, and without the preparation and adoption by the concerned population of a complete range management programme, can be destructive of the environment and can ultimately prevent its utilization for regular, sustained and maximal animal production. No pastoral water development project should be introduced unless preceded by detailed preliminary study of its effect on the environment for which it is designed.

Water provision has been a major component in most pastoral projects, consuming as much as 80% of total project costs, yet too often it has been poorly timed and excessive. Priority has been given to establishing stock-water systems because they promise highly visible demonstrations of project benefits, are simple to install, are easier for donors to finance than grazing improvements, and provide employment for foreign companies. They are usually welcomed by pastoralists, thus offering an initial entry point into the pastoral system and can as well present political opportunities for both government and donor. In some areas, however, water supply has been introduced without adequate concern for vegetative cover. The gain in secondary productivity which should result from decreasing the distance between watering points (by diminishing weight loss from trekking) becomes spurious if water is located too far in advance of organized grass production. Thus, it was maintained, stock deaths during the Sahelian drought were caused by starvation rather than by thirst, because when water was

adequately available, diminished supplies of grass and browse were not replenished fast enough to meet animal nutritional needs.

The problem of water control should not, however, be resolved by avoiding or restricting water provision, but by ensuring both adequate water supply and adequate grazing, adjusting the amount of water available to the capacity of the vegetative cover. Control may be achieved by gearing water installation to local environmental conditions, for example by using a human delivery system in dry-season range areas and limiting livestock numbers during wet-season grazing. The closing of water points should be envisaged when overgrazing occurs. It is also necessary to ensure that the water provided is of good quality, since polluted water can be harmful to the health of both animals and human beings, resulting in production losses. Finally, water lifting, distribution and maintenance could be improved by using devices which are less energy-consuming than the pump (e.g. windmill, *shaduf* or *noria)* to facilitate the work of pastoralists, and by encouraging pastoralists to be responsible for maintaining water works, possibly through land allocation measures.

Since it is exceedingly difficult to rehabilitate degraded ranges, it is critical to prevent their deterioration by every available means, including firebreaks, reserves, and measures to support sustained primary plant growth. The production of vegetative cover is a key to maximizing animal production, and dynamic and phytosociological studies are needed for accurate modification of its evolution. It is anticipated that browse will receive higher priority in pastoral projects, ideally through the inclusion of a browse component in each project for research purposes.

Grazing "rotation", which denotes a pre-planned form of grazing based on principles developed in Western countries with temperate pastures, is not equally applicable to the management of African tropical/subtropical ranges. Pastoralists follow their own equivalent methods for "strategic use" of pasture, and too little is known about the dynamics of their pasture associations (including use of scrub or "top" feed and ground feed) to make more than tentative recommendations. Instead, pastoral systems should be monitored closely to learn lessons from these long-enduring range management strategies, and efforts should be made to obtain the observations of pastoralists on the ecological dynamics of grazing, and to use them as appropriate in project design.

The impact of other animal consumers (rodents, birds, locusts, ants, etc.) which reduce the range capacity is less well understood in Africa than in temperate countries, and should be more widely investigated. Wild animals sometimes compete with livestock for water and grass, but their production potential (e.g. meat rich in protein, skins, etc) is not well known. As a rule, every effort should be made to use the most efficient and economical grazers, and in some situations (not limited to tsetse-infested areas) these may be wildlife rather than livestock.

Finally, it was pointed out that while trampling can sometimes have a harmful effect on the environment, it appears beneficial in many cases because it distributes seeds, in depth within the soil. Some research on this topic would be useful.

Livestock constraints

Klaus Meyn

Animal productivity is lower in the drier countries of sub-Saharan Africa than in most other parts of the world, yet attempts to improve it through development interventions have generally achieved poor results due to implementation difficulties encountered by most projects. Analysis of the reasons for this low productivity and exploration of the possibilities for improvement will contribute to the design of more effective improvement packages. At the same time, in view of the slow progress of most pastoral projects, attention should be given to methods of intervention which can bring about increases in production without being implemented within a project framework.

The low productivity of African pastoral herds results from poor reproduction rates (low fertility), heavy losses, low and delayed offtake, slow growth rates, and poor milk yields. These factors are affected by the climate and its secondary effects (availability of water and pasture, and animal disease), by pasture and animal management, and by the genetic of the animal. The traditional pastoral strategy of keeping a mixture of animals nevertheless represents an attempt to maximize production with the means available. Different species have different environmental tolerance and have different production and work capacities, and a mixed species system in which animals perform a variety of roles allows a range of objectives to be met in response to the requirements of survival under harsh and variable conditions.

Although their performance has been poor, the productivity potential of pastoral livestock is promising. Concerning that of cattle, their fertility could be increased, their mortality reduced, their maturity brought about earlier, and their milk yield increased, if health control and nutrition were improved; better nutrition would also allow introduction of genotypes having a milk-yield potential higher than that of indigenous animals. The reproductive efficiency of sheep and goats, on the other hand, is already extremely high, and increasing fertility under present nutritional conditions would only introduce undesirable stress. High lamb and kid mortality (relative to that of cattle) could be reduced, nevertheless, by selection of animals for higher milk yields, although this would be less important for human nutrition among pastoralists than among smallholder farmers. Mortality of young camels could be reduced but the harsh environment in which camels live would seriously hamper efforts to improve their survival rate. However, since camel milk is favoured in many nomadic societies, and since milk yields from these animals are much higher than those of cattle, improvements in marketing channels in these areas of demand might be justified.

To improve the productivity of pastoral herds, development intervention should take into account the following considerations:

1. An **efficient animal health service** is a prerequisite for rational animal production, and does not necessarily require the introduction of grazing control schemes. Moreover, given the importance of these services to pastoralists, their provision can help to establish contact and trust between pastoral communities and project representatives. Research is needed on the control, costs, and benefits of still rampant animal diseases, and on the development of water-soluble vaccines which do not require cooling equipment in the field.

2. **Adequate stock watering** reduces weight loss from trekking and from diminished dry matter intake, but it may be desirable to limit water intake during dry periods in order to maintain a positive nitrogen balance in the animal's body. To prevent range deterioration, no stock-watering point should be developed unless as part of a grazing control project or unless the number of animals being served is limited by well capacity.
3. **Improved animal nutrition** is the most critical factor in increasing productivity. Virtually all productivity constraints other than those associated with animal health and livestock marketing services result from inadequate feeding of animals. Range management seems to offer the best hope of improving feed supply, but since this takes much longer to introduce than was originally anticipated, consideration should be given to improvement to interim nutrition through mineral and dry-season feed supplementation and to the organizational aspects of feed production and transfer this effort might entail. Research should focus on the effectiveness of supplementing pastoral livestock without range control schemes, and on the possibilities for dry-season feeding reserves from irrigation perimeters or flood plains and river valleys, using simple technology. Once better nutrition can be guaranteed, more intensive systems can be studied.
4. **Animal management** practices might give greater emphasis to culling unproductive females and less to controlled mating of heifers and castration of undesirable bulls. Pastoralists normally achieve better productivity coefficients than sedentary farmers in the same environment; nevertheless, their production is likely to decline as sedentarization expands.
5. **Animal breeding** techniques offer limited hope for increasing productivity under existing conditions because natural selection is strong. Improved health and nutrition could provide a selection base, but identification of appropriate selection criteria is difficult.
6. **Livestock marketing** presents little difficulty, as adequate access to markets is generally available, and development efforts are under way to remove the remaining isolated pockets of constraint. Some possibilities for improvement still exist.

In general, while there is good potential for improvement in pastoral productivity, there are serious obstacles to achieving it, given the recalcitrance encountered in range control schemes, the erosion of the pastoral base for more intensive land use by expanding crop farming and sedentarization, and the critical need for disease control and improvement in the nutritional base. Some increases are possible nonetheless, through better animal health care, supplementation with minerals and dry-season feeds, and (to a limited extent) improvements in marketing channels; and research in the areas of animal nutrition and health would help to identify further opportunities.

Discussion

Discussion focused on the relative productive efficiency of different animals, and on the possibilities for increasing productivity in the absence of range control, by means of measures to improve nutrition (supplementation), health (veterinary services), and animal breeding (introduction of high-yield genotypes).

Varying viewpoints were expressed concerning the relative productive efficiency of cattle, sheep, and goats. Cattle, representing 70% of total animal units in pastoral herds, have received the widest attention in pastoral development schemes both because of their multi-purpose role and because they provide the principal source of milk in most pastoral areas.

Nevertheless, a mixed species system corresponding to traditional practice seems to be the most efficient mode of production for pastoralists, given the fluctuating environments in which they live. The reproductive efficiency of small ruminants appears to have been underestimated. The fecundity of sheep and goats is extraordinarily high due to short interparturition intervals and multiple births. While this leads to excessive wastage in areas of marginal nutrition, under favourable circumstances this potential is promising. It was also mentioned in regard to alternatively-based systems that there appears to be no adequate basis for the assumption that camel mortality is unusually high, a conclusion which seems to have been drawn from high mortality in twin-born animals. The camel herd structure appears to be rational and normal, and camel-based production could be feasible in areas of assured demand.

It was generally agreed that the importance of irrigated regions, river valleys, and dryland cropping areas for producing dry-season crop reserves has been neglected, and that greater attention should be given to supplementation using various feeds produced in these areas. In some places, there are mutual arrangements between pastoralists and crop producers for use of crop residues and manuring of fields. But in the Sahel, where by-products from agriculture are limited and are fully used, the cost of supplemental feed becomes a vital factor. There were differing views on the feasibility of producing green fodder crops as supplements for crop residues of lower nutritional value. Fodder crop development has been suitable in areas where permanent farming systems exist but, except in certain highland areas, it has been difficult to introduce among pastoralists because of their high mobility. In arable areas, production of fodder crops is not competitive with cash/food crops, but fodder could perhaps be envisioned as a second crop; results of studies currently under way on this subject are not yet available. Non-arable land, on the other hand, can be developed with fodder crops. Fodder crop productions should maximize cereal and dry matter output, and plant breeding should focus on this area.

The decision to improve animal health services in the absence of other control measures must be carefully weighed in terms of their potential impact on the prevailing range resource utilization pattern and. on the production system as a whole. If veterinary measures are introduced without grazing control in regions which are already overgrazed, improved animal health may lead to further range deterioration and to consequent losses from malnutrition; on the other hand, in the highly erratic environments characteristic of most pastoral areas, the traditional strategy of allowing herd numbers to fluctuate according to environmental changes appears to be more sensible than rigidly restricting herd size. If animal health services are introduced as part of a comprehensive development scheme, they must be planned in relation to the total intervention effort, and introduced at an appropriate stage of intervention, perhaps as an initial phase of a long-term animal health programme, and in association with a research function geared to analysis of their socio-economic impact for planning of subsequent phases.

Improved animal breeds may be introduced where the nutritional base is adequate and where environmental conditions are favourable. Indigenous animals are particularly drought-tolerant because their metabolic rate varies with environmental changes; high-yield breeds, on the other hand, are more drought-susceptible and thus are not well suited to arid and semi-arid zones. Also to be considered is the negative effect of increased milk production on the fertility of cattle, sheep and goats in areas of marginal nutrition. These limitations being recognized, improved breeds whose offspring, if not the first generation, have competed well with local animals have been successfully introduced in favourable environments: Sahiwal cattle in Kenya are an appropriate example.

Human factor

Neville Dyson-Hudson

The first livestock development projects have attempted to increase production rapidly, transform human standards of living, and improve the natural resource base, by means of relatively simple and limited inputs of capital, technology, and expertise of proven value in the Australo-American ranching experience. Their disappointing outcome has resulted in good measure from human factors which were not adequately understood or anticipated in planning. Pastoral development projects juxtapose two different modes of production (commercial and subsistence-oriented) which are generally incompatible, and problems arising from their different patterns of social relations are complicated by the intrusion of the behaviour systems of project representatives. Disparities in the orientation of the two production systems, and in the behaviour characteristics of producers, designers and implementers, are human factors which affect the course and outcome of development.

Virtually all African pastoral production systems are subsistence-oriented, production being intended primarily to satisfy the food requirements of producers. These systems are organized as an adaptive ecological response of human beings to a cyclical pattern of seasonal aridity, in which livestock ownership is a strategy for maintaining the greatest number of people under extraordinarily difficult environmental constraints. The ratio of livestock to human beings is therefore low, and ownership of animals is coincident with labour required for their exploitation. In depending on human (and animal) energy rather than on tools, subsistence systems are labour-intensive but require little capital. Their output efficiency must be measured according to the size of the human rather than livestock population, and this parameter must be assessed over a long time span, usually over that of a human generation, in terms of persisting human survival as measured not only numerically but in terms of fertility, nutrition, health, individual growth, etc. Production in commercial systems, on the other hand, is intended primarily for outside consumers. Output efficiency is thus measured in terms of a fixed-time quota of livestock units. The livestock: human population ratio is high, and ownership and labour are not coincidental. Commercial systems substitute fuel for human energy, and have large tool inventories, thus requiring high capital inputs for fuel and for acquisition, maintenance and replacement of equipment.

Pastoral development projects, which aim to improve production in subsistence systems, are designed to superimpose a pattern of market-oriented social relations upon those of a totally different production system which has functioned adequately for centuries. The juxtaposition of the two modes of production brings into conflict their radically different patterns of social relations, resulting in human constraints to project implementation. The introduction of the behaviour systems of project designers and project implementers compounds the problem. These actors, operating at the interface between the two contrasting systems, are critically positioned to meld the old with the new. Yet project designers are generally more familiar with market production than with subsistence production, and their approach to maximizing production is primarily cost-conscious and technology- and management-oriented. As outsiders to the situation they intend to change, they are inclined to ignore the vulnerability of project intrusion to political influences, and to believe that the effects of development will always be positive. Project implementer's function from within the parent economic system and within the political arena to which the project will be sensitive, but they, too, remain at a distance from the pastoral system and may have no greater knowledge of how it operates. The different

perspectives of these two groups, as reflected in their interactive behaviour, can result in management and organization problems which impede project effectiveness.

The human factors presented by pastoral producers can be examined from three perspectives: (a) population biology/ecology, (b) cultural values, and (c) social organization. In terms of population ecology, it appears that optimal production is already being achieved in some pastoral areas, so that the interaction of human and livestock population dynamics within the rangeland dynamics of African savannahs may not support project assumptions of requisite offtake. Lack of information relative to the many parameters of this area constrains attempts at accurate estimation, however. From the perspective of cultural values, the central issue is that of the complex psycho-social investment the pastoralists have in their livestock, which constitute their only means of survival. While traditional values work in favour of continued and effective occupation of a harsh and unrewarding environment, projects aim to reorient this mental set towards a materialistic, individualistic, and market-oriented outlook.

The major issue, however, is that of social organization among pastoral producers and its implications for development projects. The social structure of the subsistence livestock production system is characterized by four levels of organization: political society (for peaceful competition between production units); natural resource allocation unit (for primary political identification); sociability unit (for information exchange, visiting, coexistence, cooperation); and production unit (including feeding and foraging), autonomous and responsible for its own survival. These units differ in size, and in degree of permanence, predictability and autonomy, the sociability unit being the most transient and unpredictable. This flexible organizational structure provides a highly efficient means of ensuring unimpeded movement, free population fluctuation, and control of competition; it is thus ingeniously geared to preserving a fragile balance between organizational permanence and adaption required by fluctuating environmental conditions.

As an arrangement of autonomous nuclear production units in environmentally response-free movement, the pastoral mode of production has been the most energy-efficient solution to the problem of organizing large human and animal populations to meet survival requirements under harsh conditions. But these organizational forms, their associated population levels and their supporting ideologies, in stessing small group autonomy, organizational flexibility and producer equivalence, have presented persistently negative obstacles to the design of commercially oriented livestock production systems, which require a hierarchical and predictable system of organization for the purpose of coordination, with attendant high energy and capital consumption. Social group distribution, resource allocation procedures, decision-making patterns and leadership modes in pastoral production systems are virtually never compatible with the requirements of externally bankable "ranch" production models; and the complexity of its social organization makes the subsistence systems highly resistant to attempts to introduce changes in management strategy over the short term.

Projects have thus embodied assumptions which are completely contrary to the enduring organizational forms of indigenous subsistence livestock systems. They have been conceived on the wrong scale, on naive assumptions of pastoral inefficiency, productivity margins, and resource and livestock predictability. They have assumed that capital and technological intervention could induce rapid changes in adaptive methods derived from centuries of experience, when the more fundamental requirement is the evolution of a new set of social relationships and new social institutions, which is only possible as a long-term process involving high ethical as well as economic risk.

It does appear possible to bring about the gradual reorientation of pastoral management practices, but only if a radically different approach to project design is devised. Projects must be envisioned not in terms of regional productivity increase for central/ national consumers but in terms of balanced product exchange, allowing for differences in producer strategy and degree of involvement within the same target population. They should relate to a development policy oriented to block capital allocation funding of clusters of small-scale intermediate-technology projects. They should be supported by a more adequate data base and should routinely provide for greater feedback for alteration of objectives and procedures. They should not assume that the same levels of achievement can be reached under different conditions of national productivity, natural resources, and regional living. And they must allow more active participation of pastoral producers.

Discussion

The participation of pastoral peoples is certainly one of the most problematic constraints to pastoral development. While it may be desirable to involve pastoralists in planning, this is more difficult to achieve than it would appear. For one thing, because pastoral societies place little emphasis on organization, it is difficult to identify a structure which can be used to make contact in order to obtain relevant information. For another, because they are neither stratified nor homogeneous, their interests differ widely, especially between small and large producers. Deliberate attempts to consult them may evoke widely varied responses which are difficult for observers to weigh objectively. At the same time, participation of pastoralists in planning may be limited by their lack of awareness of possibilities. To involve pastoralists appropriately, it is necessary to distinguish not only that which is common among their different interests and to become familiar with their proven production techniques, but also to encourage them to identify their needs through dialogue.

To this end, their socio-territorial organizations should be studied to identify manageable and relatively homogeneous discussion/planning situations. On this subject, it was questioned whether range surveys carried out largely by overflying, and relating to ecological divisions rather than social organization, are acceptable when socio-territorial groupings generally relate rather to lines of communication. At the same time, the value of socio-anthropological studies was questioned by some participants. These studies, more generalized and reflective than predictive, have not been adequately equipped to examine the emergence of new social factors, or to foresee whether an innovation will have the desired effect on the system for which it is planned. Nevertheless, since project interventions are designed by human beings for human beings, and have an impact on social institutions and relationships, the socio-anthropological perspective may be a valuable planning tool. Trial and error has also produced positive results, however, as have benevolently autocratic government initiatives combining prescription and persuasion.

The problems associated with human constraints inevitably interact with considerations of land allocation. The extent to which land reform is a condition for successful pastoral development depends upon both the climate and the aspirations of the people in the area to be developed; it appears to be a prerequisite for development of high-rainfall areas, whereas it is not accorded high priority in arid and wide-ranging territories of less concentrated population. It was observed, however, that although land reform has not had uniformly positive results, rapid resource degradation has occurred in areas where ownership of land and water has not been legislated, nor human responsibilities allocated, and that responsible resource management cannot be assured unless land utilization is to some extent controlled by law. The form and degree of

control required would be dictated by the specific socio-environmental circumstances; thus land reform need not imply individual land ownership in nomadic areas, where group territorial holding would correspond more closely to traditional grazing practices. In general, land allocation systems should be simple and flexible, and should correspond to existing social structures rather than attempt major systematic change.

Politico-economic constraints

Ralph von Kaufmann

Despite the availability of ample funds, adequate technology, and knowledge of pastoralist behaviour, pastoral livestock projects continue to be disappointing, partly because they are badly designed, poorly organized, and incompetently managed—ironically, by typically well-trained and experienced people. This generally occurs as a consequence of over-emphasis on the economic and political interests of aid agencies and governments. If pastoral projects are truly to improve the welfare of this greatly impoverished sector of society, it is necessary to identify the politico-economic factors which influence their design and manageability, and to adjust development priorities towards a more apolitical structure of objectives.

Three major politico-economic constraints distort the planning of projects and render them unmanageable: (a) the order of priority of objectives is misplaced; (b) projects are conceived to operate in isolation from the politico-economic environment for which they are designed and (c) perhaps most important, in the attempt to learn from project experience, insufficient effort has been made to directly identify and to explain successful practices, whether or not they have been related to development intervention, and to incorporate the lessons of success into project design.

The disappointing outcome of projects indicates that there is a pressing need to clarify development priorities and to orient project design to these priorities. The main purpose of development should be to bring exceedingly deprived human beings to the point where they can sustain their own development. Pastoral projects should enable pastoralists to help themselves to become self-sufficient, yet they usually prevent self-sustaining development of this sort because their design is based on a sequence of priorities oriented to the achievement of unrealistic commercially-oriented objectives. Projects must be formulated according to the needs of those they are intended to serve, and their success judged by the degree to which they enable these basic needs to be met, rather than by their attainment of ambitious technical and financial goals.

In project planning, priority is generally given to donor objectives and to the politico-administrative considerations of the government. The donor assumes the leading role of identification, then involves the government in planning and negotiations; the appointment of management follows later, and contact with the beneficiaries is realized last. The predominance of donor and government interests in this order of priorities results in unmanageable projects which serve no-one effectively. The order should be reversed, the needs of beneficiaries being addressed first, followed by those of the management available. Once the human needs of the beneficiaries have been identified, and decisions made as to how the project should be operated in order to serve them most effectively, then it can be determined how the national government can most appropriately assist the project manager in realizing this purpose, and

finally in what ways the aid agency can most effectively support the efforts of the host government.

In designing projects according to this priority of objectives, the following sequence of issues should be addressed:

1. Beneficiaries are first and foremost human beings who are in a highly vulnerable position arising from their uncompetitive status in the cash-trade and labour markets and from their minimal welfare amenities. It is the tenuousness of their existence which must be considered in planning, their ethnic features being of secondary interest.
2. To the extent possible, project management and managerial procedures must be compatible with the socio-administrative structures of the environment in which the project is to operate, with minimal dependence on expatriate management.
3. The government should not be persuaded to deal with project sponsors at a level above that which is appropriate to the importance of the project; the project must not be allowed to become too ambitious for the available management and government support capability.
4. Aid donors should be more straightforward in their analysis of politico-economic factors in countries they wish to assist, and not pledge unconditional support which would be difficult to modify without bringing government and management into conflict.

With such an order of priorities as a frame of reference, the present project evaluation criteria prove to be inadequate. Pastoral projects are expected to meet unrealistic techno-commercial criteria which are, in fact, often beyond the capability of beneficiaries; generally falling far short of these expectations, they are considered to be failures. But if their main objective is to serve an exceedingly poor and backward sector of society, it is inappropriate to judge them by commercial yardsticks, the achievement of the ability to cope, that is, to manage independently, being a most relevant indicator of project success. The revision of evaluation criteria to count learning and experience as direct benefits would lead to a more accurate, realistic, and positive assessment of the outcome of interventions. Use of such criteria would strengthen the training element, especially in the decision-making process, and could help to develop a more sympathetic attitude toward project management on the part of supervision and evaluation staff.

Finally, the planning and evaluation of pastoral projects is impaired by the fact that aid donors and government officials are frequently unfamiliar with how a successful project or farm actually operates. Positive achievements have occurred not only with but without and even in spite of project intervention, and it would appear sensible to ascertain directly from successful project managers and African farmers the factors which made their achievements possible. Management success which have resulted from flexible, and even daring, interpretations of plans and agreements would be of particular interest. Politico-economic, organizational, and management constraints cannot be assessed without the testimony of this first-hand recent and African experience. Such evidence. would serve as a basis for defining objective criteria for assessing the achievements of project management, thus providing a necessary counterbalance to the limitations of academic and official analysis.

Discussion

Apart from the constraints identified in the paper, other politico-economic issues are equally relevant to the management of projects. Foremost among these is the political relationship of pastoral peoples with their national governments, because this greatly influences how far

pastoralist interests may be protected, especially where institutions of multiple resource use or agricultural intensification are concerned. In many parts of the world, national governments have tried to destroy traditional pastoralist authority structures, either from ethnic rivalry or because of a belief in pastoral inefficiency. This is not generally sensible, and indeed has not often been successful. Yet traditional structures may be inappropriate for achievement of national development goals, and it is therefore equally misleading to argue in favour of conserving social forms which have been functionally efficient in the past but are inadequate for—the new organizational tasks required of them. The old forms of organization, although exceedingly durable, are not immutable, and can provide a starting point for involving pastoralists in the development process. Certainly, some governments have recognized the need to identify the wishes of pastoral populations, and there have even been occasional instances where the national political leadership or the national economic interest has been itself explicitly pastoral. Quite often, then, it is necessary and can be possible, for governments to recognize and reconcile somewhat different national and pastoral interests. They may thereby encourage pastoralist participation while making their own nationally-oriented demands, and succeed in creating an acceptable situation different from that which the pastoralist alone might have created. Mixed farming established by SODEPA in a newly opened area of Cameroon, which might otherwise have been used solely for traditional grazing exploitation, was offered as an example of such a compromise.

A related but distinctive issue is land reform. The exact relationship of land reform to livestock development is still difficult to define; in different parts of the world, different forms of tenure are being tried, and transition to alternative tenure forms has varied from being a prerequisite for project financing to being an expected outcome of project operation and of the development process. Some degree of institutional change does appear necessary for livestock development, and seems particularly to require the interaction of credit and land reform. Land reform is likely to be most successful where it keeps as close to traditional pastoral forms as the changing circumstances will allow, and is put into effect over as wide an area as possible. A major constraint still exists in the social organization of pastoralism, particularly the difficulty of creating a convergence of interests between pastoral producers as individual owners of herds and collective owners of pasture.

A distorting paradox in the livestock development process, which surely acts as a politico-economic constraint, is that in order to participate in a development project, pastoralists are required to engage in demonstrably unsound economic behaviour. Pastoralism as traditionally practised involves high risks but requires little capital. Projects require producers to further increase their risk through raising costs for benefits which not only may not be apparent to them but which cannot be fully guaranteed. This amounts to asking them to gamble with their basic assets, not merely with their extra assets.

Also within the realm of paradox is an apparent contradiction in the paper: it is argued that there has been a high failure rate in livestock projects, yet that project managers have achieved numerous, and insufficiently recognized, successes. This paradox may be explained in terms of the varying criteria by which failure or success may be judged. Considering the constraints under which projects operate, expectations for their large-scale and uniformly positive results must be considered naive; yet while a project may fail in terms of the standards of planners, some degree of modification may occur the effects of which are locally beneficial.

Project financing

The project cycle

Warren C. Baum

Project lending by the World Bank involves governments of underdeveloped countries in a series of activities and procedures which is designed to ensure that Bank funds are invested in sound, productive projects that contribute to the development of the borrower's economy as well as to its capacity to repay the funds advanced. Project development in relation to the aims and methods of the Bank proceeds in a self-regenerating cycle of six phases, each following upon the last and the last in turn allowing the Bank to define new approaches and ideas which lead to the identification of new projects. These phases are identification, preparation, appraisal, negotiation, implementation and supervision, and evaluation.

Identification involves both Bank and borrower in the selection of suitable projects that support national and sectoral development strategies. Economic and sector analyses by the Bank provide an understanding of the development potential of the borrowing country, and a framework for assessing creditworthiness and for evaluating national and sectoral policies and problems. Continuing dialogue between Bank and country based on this analysis leads to the formation of a coherent development strategy and to the identification of projects which fit into it. These projects must meet the Bank standards of feasibility—they must involve technical and institutional solutions at costs commensurate with expected benefits. Once identified, they are incorporated into the Bank's lending programme for the particular country.

In the **preparation** phase, feasibility studies are carried out to compare different technical and institutional alternatives, and to identify the solution most appropriate to the country's resource endowment and its stage of development. The borrower examines the technical, institutional, economic, and financial conditions necessary to achieve project objectives, while the 'Bank provides guidance and makes financial assistance available for preparation, or helps the borrower obtain assistance from other sources. This process typically requires one to two years.

Preparatory work culminates in the **appraisal** phase of the cycle, which involves a comprehensive; and systematic review of all aspects of the project by the Bank, and lays the foundations for project implementation and evaluation. Appraisal may take three to five weeks in the field, and covers four major aspects: technical, institutional, economic, and financial. During this process, the project may be extensively modified or redesigned. An appraisal report is draughted at Bank headquarters outlining the findings of the appraisal mission and making recommendations for the, terms and conditions of the loan. After extensive review, a Staff Appraisal Report is issued which serves as the basis for negotiations with the borrower.

Negotiations involve discussion between Bank and borrower on measures needed to ensure project success. The agreements reached are converted into legal obligations set forth in loan documents. The loan documents embody all of the principal issues that have been raised prior to and during appraisal, and ensure that borrower and Bank are in agreement on objectives, on the actions necessary to achieve them, and on the schedule for implementation. The appraisal report is amended to reflect the agreements reached, and is presented together with the loan

documents to the executive directors of the Bank for approval. Once approved, the loan agreement is signed and the project is ready for implementation.

Project **implementation** is the responsibility of the borrower, while the Bank exercises a supervisory function. Supervision by the Bank, through progress reports from the borrower and periodic field visits, is intended to ensure proper execution of the project by identifying and correcting implementation problems. Monitoring and evaluation units incorporated into the project are used to gather information on project experience, to improve policies and procedures and for use in future planning. Procurement of goods and works for the project must follow official bank guidelines for efficiency and economy, and supervision focuses on ensuring that procurement rules are observed in practice. As a final step in supervision, the government prepares a completion report on the project at the end of the disbursement period. An annual review of Bank supervision experience on all projects under way is intended to stimulate continual improvement in policies and procedures.

Evaluation follows the final disbursement of Bank funds. An independent department of the Bank, the Operations Evaluation Department (OED), reviews the completion report and prepares its own audit of the project, usually by reviewing materials at headquarters, though field trips are made when needed. These reports re-estimate the economic rate of return on the basis of actual implementation costs and updated information on operating costs and expected benefits. The borrower is asked to comment on the OED audit. This ex post evaluation provides lessons from experience which are incorporated in the identification, preparation and appraisal of subsequent projects.

Discussion

World Bank procedures differ substantially from those of other financing agencies, and the criteria of different donors should be compared to determine which are least restricting to implementation and therefore most likely to lead to sound livestock development.

World Bank requirements could be less complex and more consecutive, and greater flexibility in adapting to their specified needs during project preparation would be much appreciated by the governments concerned. Procurement procedures are so complicated and time-consuming that it is frequently impossible to obtain the required materials within the time-frame specified, and excessive conditions and provisions lead to great waste of time and resources, resulting in the escalation of project costs. Furthermore, lengthy planning risks disappointing the local people in their expectation of early realization of benefits, and worse, it allows a complete change in conditions to occur between the beginning of the planning period and the time when implementation is begun, which can invalidate the original project plan.

Originally conceived for the development of infrastructure, the World Bank cycle does not seem appropriate to the requirements of rural development, in particular to those of pastoral projects. For the latter, the planning process should be simplified and made more dynamic, and should enable project proposals to be tested on a small scale before being fully implemented in the field. Greater flexibility should be allowed in the implementation process, and operation evaluation must occur early enough for results to be incorporated into subsequent stages. Finally, it was confirmed that while project supervision should provide an opportunity for effecting changes in implementation, it can be counterproductive when the advice of successive missions is contradictory and ill-informed as a consequence of changes in personnel.

Beyond improvements which could be brought to the cycle, a more fundamental problem exists: that of the suitability of the project as an organizational form for pastoral development. Projects, as they are currently conceived, are too rigidly planned in advance, have a short period of investment, and are confined in time and in space. They are also capital-intensive, and their structure, as a conglomeration of non-interdependent components, lacks flexibility and leads to the creation of complex bureaucracies. Internal contradictions in the project process too often lead to negative development, suggesting the need for a development framework more suited to the complexities of pastoral areas and their societies. In line with the recommendations of the Brandt Commission, a programme approach, which would allow long-term planning of smaller sequential actions, positioned incrementally, for which financing could be realized from development funds, appears to be more appropriate. At the same time, it is important to learn from the many small projects supported by the more modest agencies, such as charitable organizations or voluntary services, some of which have achieved noteworthy, results with limited funds.

Constraints related to financing and timing

Poul Sihm

Pastoral development strategy can be distorted and rendered ineffective by the requirements of aid and government agencies. These requirements are often taken for granted as unchangeable, but it is important to examine the extent of their influence on the outcome of projects, and to identify those procedures whose modification would help to remove constraints to implementation.

A major constraint in project financing occurs in the area of counterpart financing by governments, in which salaries for local staff and other local currency costs for the project are met from national development budgets while aid financing is used primarily to cover foreign exchange expenditures. The desire to attract maximum foreign exchange may lead to overcommitment on the part of the government, resulting in delays in project implementation and eventual collapse of the project.

Other financial constraints occur with respect to multilateral credits or loans. These loans, administered by the intergovernmental development banks or funds, provide the largest source of finance for pastoral development. While they might appear to be ideal for financing the development of pastoral areas because they are offered in large blocks and on lenient terms, they create a number of problems for project implementation. For one thing, the administrative cost of identification, preparation and appraisal makes them outstandingly large, and thus suited primarily for large, complex projects which are often beyond government support capability. At the same time, their conspicuous size is conducive to political and interagency rivalry. The size of the project gives the predominant power of decision to design and appraisal teams, and this, combined with an acute shortage of factual information, can lead to costly large-scale experiments, with the possibility of subsequent frustration. Furthermore, the benefits of large-scale projects materialize slowly and are diverse and difficult to measure; as a result, the government may decide to modify or reject a project at the point when it is required to assume the full cost of continuing it. Finally, these loans are administered in accordance with often rigorous procedures which confound project administrators, who consequently tend to interpret loan and appraisal documents too rigidly; this adds unnecessary inflexibility to project implementation. Disbursement and control procedures are complex and the administrative procedures of the different agencies lack adequate standardization.

These problems are compounded when funding for a large-scale project is provided jointly by several multilateral or bilateral agencies. Constraints from co-financing are minimal if it involves a combination of loans and grants, or joint financing under a common set of procedures. However, parallel financing, in which each agency finances a specified part of the project according to its own procedures, is far more commonly employed, and the idiosyncrasies of the procurement, disbursement and control procedures of the different agencies complicate administrative operations and multiply the problems of over commitment already mentioned.

Financial considerations have a decisive—and constraining—influence on the timing of project inputs. Complex aid agency procedures, as well as inability of governments to fulfill their commitments for local cost financing, can cause delays in the timely provision of staff, equipment, and major innovations. The main problem, however, is that the duration necessary for the implementation of inputs according to the imperatives of development strategy is not compatible with that imposed by economic and financial considerations; that is, in pastoral projects, early disbursement of capital costs is not usually possible, yet the project investment period is limited to five or six years to avoid escalation of contingency costs. Usually, commitment for a follow-up project cannot be obtained, and considerable disruption may be caused by the inability of both government and aid agency to time a smooth transition between stages of funding. In manufacturing and industrial areas, this problem is resolved by phasing of loan financing, with separate loans or credits for discrete activities, such as preparation (engineering) and implementation; phased lending might also be applied to pastoral projects, in which preparation and implementation could be similarly distinguished as phases to be separately financed.

Still other constraints arise in regard to the economic rate of return (ERR). This calculation expresses the consensus of the appraisal mission with regard to the desirability of the project. In directing the most appropriate allocation of scarce aid funds, the ERR is theoretically useful for ranking development projects according to their viability, and for calculating a minimum acceptable return with reference to returns achievable with alternative uses of the same funds. However, for pastoral projects, the effects of which are slow to be realized and not always quantifiable, it is difficult to achieve a precise rate of return. The first five-year project generally shows a low rate of return due to heavy initial investment in infrastructure, while subsequent phases may achieve a considerably higher rate of return as intended improvements begin to materialize.

The relending of concessional finance at market rates of interest is also problematic. The rationale for such relending is based on the assumption that it will encourage economic self-sufficiency of the host government, and thus enable the project to "stand on its own feet". While the benefits of such relending are clear for a high-return industry, for pastoral development concessional funds might be more effectively reloaned on concessional terms (at preferential rates).

The extent of the distortion imposed by donor and government requirements on pastoral development strategy must be precisely determined. Moreover, it should be determined if these requirements can be satisfied by modifying the present project lending approach in the direction either of sector or subsector lending or of the establishment of special concessional funds for pastoral development, and if an analogy in terms of risk can be drawn between pastoral and "hard sector" projects (such as oil exploration and mining) which can be used to argue for phased loan financing. Finally, the usefulness of the economic rate of return calculation in the pastoral development field requires further deliberation.

Discussion

In this discussion, which focused on the extent to which pastoral development strategy is distorted by the requirements of financing agencies, it was acknowledged that aid agency procedures can have a stimulating effect on both government and project administration. Donors can help to establish realistic preconditions for government planning, and are not always inflexible in responding to field realities. Nevertheless, their requirements do impose serious constraints. Lack of a consistent approach to the appraisal of follow-up projects, enforced by changing composition of missions, creates problems not only in regard to the economics of the project but also in project conceptualization, and subjects pastoralists to high and inconsistent expectations which may harden their resistance to the project. Complicated procurement procedures cause serious delays in implementation, and prevent governments from making an early capital investment for equipment which would avoid the heavy impact of inflation on project costs.

While it was agreed that projects are generally too ambitious and are required to have too short development periods, their large size (and cost) was attributed not only to unrealistic donor requirements but to the preference of governments, where the latter has emerged from local need to mobilize support for the project. This being the case, it is necessary not only that aid agencies adapt their financing and timing requirements to the interests of the host government, but that both groups orient their objectives to the requirements of development strategy.

Serious doubts were expressed concerning the usefulness of evaluating pastoral development interventions by means of the economic rate of return calculation. The ERR indicates neither the project's effect on the repayment capacity of the host government nor the attractiveness of the investment to pastoralists; further, it is not useful unless there are alternatives with which the project can be compared, and this is not usually the case.

It is often subject to manipulation, and, in pastoral areas, is based on incremental meat offtake from what is generally a dairy production system. In spite of its limitation, however, the ERR is likely to be increasingly applied by donors to judge the viability of projects, as public funds become increasingly scarce, and as long as no other instrument exists with which to measure efficiency of resource allocation with greater precision. It should nevertheless be weighed as but one element of a larger decision-making process.

It was also observed that the risk of high inflation need not deter project funding if a dual-or multiple-phased approach is taken in which long-term development is envisioned at the outset of an initial investigation phase intended to provide information for preparation of a subsequent flexible execution phase, in which progress would be evaluated prior to further implementation. Financing need not be tied to an inflexible investment mix but may be supplied from broad components, and, most important, may be allocated from different time points for discrete incremental activities. Rural development funds, such as those currently operating in Upper Volta, Senegal, Chad, and Cameroon, offer a practical approach by incorporating a large element of discretionary funding for uses which, rather than being defined at the outset, can be determined as the project evolves. Phasing of financing is problematic, however, in that in order to justify allocations at different points in time, the effects of such allocations must be identified; such effects are not well understood at this time, and a precise method of identification is required.

Acceptance of long-term phased disbursement of funds as the preferable approach to financing pastoral development leaves unsolved the problem of determining the most suitable funding methods. Counterpart financing can overburden limited local budgets, while rapid shifts from external to national financing after the investment period can exacerbate existing balance of payment problems, which may result in the demise of the project. Although extension of credit in association with land reform has enabled pastoralists to adopt innovations, credit financing has serious limitations, primarily lack of control. The rate of recovery is generally slow, and, among other effects, subsidized credit can be absorbed by powerful members of society instead of reaching targeted recipients.

Controlled subsidies for specific development items offer an appropriate solution in areas where commercial investment in production units cannot be sustained at the market rate of interest, and where it is uneconomic for the government to promote such an enterprise. Grant funding should receive wider attention, especially for development of arid regions. In any situation, local financing sources should be fully explored, including stockholder participation. It may be found that pastoralists are willing to contribute financially, especially in cash, as long as they are involved in how their assets are disbursed, have some degree of active management responsibility, and correctly perceive the benefits of such investment.

Succession in design and implementation

Cameron Chisholm

The fragmented and disappointing outcome of livestock subsector development in Africa may be attributed in part to several major and interlinked deficiencies in the project cycle which relate to timing constraints imposed by a lengthy period of genesis. Controls imposed by financing agencies for the purpose of systemizing livestock project development cycles tend in some ways to retard their implementation. Financial and technical regulations, although intended to bring projects to fruition efficiently, can, in being complex, inconsecutive, and weighted toward preserving the interests of the financing agency, have a negative impact on the achievement of national development objectives. Consequently, it is necessary to identify and to modify the dysfunctional aspects of the cycle, without at the same time disavowing its positive regulatory effects.

Perhaps the most serious limitation in the project financing cycle is its tendency toward overemphasis on controls, as evidenced by the often excessive number of people, organizations and institutions involved in the creation of a project. The associated differences of opinion can lead to hesitation and redirection of components which prove inefficient and costly in both time and money. Compounding the problem is the fact that controls are frequently applied inconsistently as a result of personnel changes in the supervision missions sent by the financing organizations at various stages of preparation and implementation. These changes are not only conducive to variable interpretation of loan documents but frequently lead to major redirection of the entire enterprise between the identification and appraisal periods, further upsetting project momentum in the process. Implying technical and design inconsistency within the financing institutions, from the government's point of view this is the most disruptive and disconcerting factor associated with project financing procedures. Such inefficiencies are multiplied in multi-donor projects, where the complexity and variety of the different donor criteria can lead to even greater fragmentation in management and components.

Overly diligent controls can place the government at a disadvantage. Even though the government is required to bear the total financial risk and responsibility for project execution, its interests can be unequally represented throughout the planning process, and its room to maneuver in launching a project largely restricted by complicated regulations designed to ensure the most efficient use of aid funds. Thus projects are sometimes identified and prepared in isolation from early and active government involvement, and at the project appraisal stage the overriding decision-making powers of the appraisal teams may lead to fragmentation and redesign of project concepts which can further preempt government interests and prolong negotiations. Moreover, during negotiations, the initiative remains with the financing partners, and the government's position may be handicapped by the late delivery of appraisal documents. Finally, at the implementation stage, the government is forced to comply with strict procurement procedures and requirements which further constrain the timely achievement of objectives.

As a result of these deficiencies, projects become unwieldy, and the timetable for their completion grows excessively long. Preparation costs escalate, thus diverting funds from direct investment in development, and the project is needlessly exposed to inflationary influences. Faced with these varying constraints, the government becomes uncertain, frustrated, and increasingly impatient; the relationship between government and financier becomes strained, and the aid agency grows disillusioned and skeptical.

Since African governments will need to continue to finance the majority of their development projects internationally until they reach self-sufficiency in financial resources, planning and management, both parties would gain from an effort to improve their relationship by modifying financing procedures in the direction of greater consistency and continuity. Shortening the time frame of the early stages of the project cycle while at the same time combining or eliminating functions in order to reduce the steps or stages involved would significantly contribute toward this end. This may be accomplished by:

1. combining identification and preparation (preappraisal) where they are designed to be carried out as separate exercises, and phasing in the appraisal function to the latter stages of preparation, so that the project will retain an overall consistency from preparation to negotiation, and will thus be more acceptable to the government;
2. minimizing personnel changes and including appraisal team participants in supervision missions;
3. actively involving government initiative and responsibility from the very beginning of the process, giving greater weight to the objectives of government by formulating a clear understanding of its development priorities, and allowing full representation of its interests during negotiations by timely release of appraisal documents;
4. combining project preparation and management as a linked responsibility.

Discussion

Although the time frame of the project cycle might appear to be excessively long, shortening the stages in the cycle would not necessarily alleviate constraints to implementation. A combined identification and preparation function could certainly be envisaged (as is now done by other agencies in the context of a rural development fund), but reducing the pre-development period might weaken the analysis of socio-economic and other relevant factors, and valuable training opportunities could be lost. Poor achievement of objectives and lengthy extensions of project implementation could be largely avoided not by shortening the cycle but by establishing realistic

objectives and time frames which would be accepted as phases in the long-term development of pastoral areas; that is, by adopting an incremental approach.

It was generally agreed that where co-financing is employed, substantial differences between the procedures of the World Bank and those of other agencies can have a demoralizing effect. The participants further affirmed the need for continuity in supervision, minimal personnel changes and a flexible approach oriented toward assistance in problem-solving being critical in maintaining the confidence of governments.

Discussion on the efficacy of credit established the fact that the value of credit is not sufficiently indicated by current recovery rates, and that efforts should be made to design a more effective credit system which would lead to maximum recovery of loans, perhaps by including coverage from several sources, such as commercial loans from governments; even traditional money-lenders might offer an occasional advantage, notwithstanding their generally high interest rates. It was also recommended that project implementers be fully represented during negotiations, in order to ensure the preparation of an intelligible credit agreement.

Financiers have been loath to support the use of parastatal organizations in national livestock development programmes because they have not usually been financially successful as commercial production units per se. Even so, they may be the most appropriate form of institution to provide necessary inputs (such as crossbreed heifers or disease-resistant livestock) into a sector where no other viable option exists. Parastatal institutions can be useful in market intervention, to counter seasonal variations in prices. They have also encouraged the orderly use of new lands; the SODEPA Cameroon ranching project is an example of a successful government-owned-and-operated enterprise, in which pastoralists were encouraged to move into agricultural areas which where then demarcated as individual circumscribed ranching units.

Project design and implementation

Design by objective

David J. Pratt

Failures in livestock development projects have often been blamed on faulty design resulting from inadequate knowledge of the constraints and workings of both pastoral societies and projects themselves, and from poor choice of inputs as a consequence of this lack of understanding. A more accurate explanation, however, lies in the inept handling (or organization) of these inputs.

In project design, the most important consideration is how best to use and organize project variables in order to realize a form of intervention which will be successful on the ground. Since this requires a clear understanding of the specific objectives to be attained, the first step in project design must be to decide precisely what these objectives are. The use of objectives as a point of departure for project design leads automatically to a logical sequence of decisions concerning the most appropriate organization of inputs.

While the aim of the project may be described in general terms (such as increase in output, improvement in the quality of life, or preservation of the rangeland resource), determination of objectives requires more than a generalized statement of intent; for such a statement, however explicit, gives no indication of where one starts or how one goes about realizing the stated ideals. Since all forms of pastoral development imply and demand management, whether of range, animals, or flow of animals to market, the first objective of pastoral development must be to assure adequate management standards and opportunities, from which other benefits can be expected to follow.

Determination of this first objective immediately raises the question of who will assume the responsibility for management. While this may be successfully undertaken by paternalistic governments having sufficient authority and motivation, for African countries it would seem more judicious to enable and encourage pastoralists to develop their own management capability. In the pastoral context, this capability is best developed on the basis of social/territorial groups, since group rather than individual herd management is involved. Appropriate local social and territorial groupings must therefore be identified and given legal status, so that entities will exist for the purposes of negotiation and delegation of management responsibility. At the same time, efficiency in developing local capability depends not only on the quality of the extension service provided but on the extent to which the pastoralists can identify with the selected form of local organization. With these considerations in view, the first major objective of pastoral development appears more distinctly to be the creation of units of appropriate size and constitution to facilitate management and growing participation of pastoralists in the development process.

The choice of appropriate units for the transfer of management responsibility provides a framework for making priority decisions relative to the organization of project variables, these including not only physical inputs, manpower and finance, but conceptual aspects relating to project scope or size, time perspective, and allocation of responsibility for management and coordination. Conceptual aspects, in particular, direct attention to some of the most basic decisions in project design.

The scope of a project relates to both land area and population. The optimum size of a project is best determined according to the available management capacity, and both land area and population must be analysed in terms of manageability. At the same time, decisions must be made concerning who will be the beneficiaries of the project. Although these will be primarily social and political decisions, the consequent economic and organizational (and ethical) implications must be weighed in terms of the changes in relative wealth that are likely to occur as a result of project intervention. This determination must be made according to the circumstances and social organization of the group(s) concerned, and therefore requires intimate knowledge of their social and environmental characteristics. Population size is another fundamental consideration, as this determines the number of animals for sale; and it is critically important to examine demographic pressure and to consider whether (and at what point) measures for its reduction are required.

While it is generally acknowledged that pastoral development is a long-term venture, most projects have tended to overprescribe at the outset both what is needed and expected benefits. This approach may The attributed to insufficient time allowed for predevelopment survey; but improved understanding of requirements will not, in itself, guarantee an effective development strategy, for it is not a question simply of what should be done but in what order and on the evidence of what changes in the system being developed. Rather than plan through successive

stages of change on the basis of limited experience, it would be better to prescribe only the first objective and the first (limited) input, on the basis of existing knowledge, and to proceed by incremental steps guided by events. At each step, the aim would be to optimize safety and incentive or benefit, while retaining an appropriate degree of flexibility to allow for adaption to experience. An incremental approach would allow planning to proceed on the evidence of changes as they evolve in the system, and inputs would be manipulated in a more fluid sequence than that allowed by a finite all-embracing plan.

Allocation of responsibility refers to management of both land, finance, and the project itself. It is necessary not only to decide whether pastoralists or the government will assume land management responsibility, but to evaluate the effects of this decision on manpower requirements, training, extension services, and allocation of financial responsibility. Land management by means of local organizations provides an opportunity for governments to involve pastoralists in the financing of development through credit extension measures, which helps to develop their sense of responsibility and to encourage their commercial orientation. At the same time, since involving pastoralists in credit arrangements presupposes the existence of security, the question of land tenure becomes another critical factor, specifically with regard to the most suitable form of title to be offered.

In effect, project success depends in great measure on the choice of the most appropriate form of local organization, whether loosely structured grazing association, group ranch, or other. This choice must be based on consideration of population, relative wealth, financial responsibility and varying forms of land tenure. The ideal would be to select an organization with which the pastoral groups concerned could readily identify, and which would accommodate their perspective and needs while enabling them to exercise increasing management responsibility and control, and providing incentive for their participation in economic development.

To the extent that the foregoing issues demand government policy decisions which will involve a multiplicity of departments, agencies and offices during the life of the project, a development programme cannot be effective unless an autonomous coordination unit, directed by an individual who has specific responsibility and authority for coordinating pastoral development, is created within the government structure. Similarly, at the level of the individual project, overall management responsibility should be vested in one individual whose authority is supported by structures appropriate to the size and complexity of the programme.

In the end, success of a project is measured by its manageability. Projects which are planned without regard for management requirements and availability, and which lack a formal liaison mechanism between project management and pastoral groups, can hardly hope to be effective. To maximize management potential, the first phase of a project must include an adequate training component, in which both management and field staff could acquire not merely technical competence but understanding of local strategies, perspectives and needs. Interdisciplinary training of the field officer is essential in view of his multifaceted role as liaison between pastoralists and government, technical advisor, and monitoring officer.

The principle of incremental development appears to offer the most appropriate means of improving project performance. Projects have failed because they have embodied unreasonable expectations, not in terms of technical feasibility but in terms of availability and capability of management and of time allowed to produce results. If they are to be sensible in expectation and manageable in practice, their design must follow an incremental process which allows safe

and appropriate activities at an initial stage while knowledge and planning capability are being improved, and which does not place excessive demands on management.

At the same time, sufficiently comprehensive research is needed to produce defensible hypotheses for planning. This would best be completed through a few in-depth studies based on existing development situations, supplemented by more standardized data collection from pooled project experience. An adequate monitoring capability is essential from the time inputs are first made in the field, to provide information on which to base subsequent choices.

Discussion

Pastoral development is appropriately viewed as a means to optimize local management of land and of production. While at this time project planning and implementation are tempered by financial considerations and are rigidly dictated by aid agency requirements, adoption of an incremental approach, and acceptance of such an approach by financing agencies, would make it possible to alleviate many of the most serious constraints to development. With this accomplished, there would be far fewer obstacles to helping the pastoral users of land to manage and produce more effectively.

A livestock development intervention should be accepted as an incremental action which brings incremental benefits at incremental cost. An incremental approach would recognize Livestock development as a long-term undertaking requiring initial coordinated investment in small experimental projects, designed primarily as planning phases having an assumed positive multiplier effect. Projects designed within such a framework would involve less risk than large-scale financial commitment toward overprescribed goals formulated on the basis of limited knowledge. As an investment in the survival of people and resources, a development intervention should provide an entry point into a traditional production sector for the purpose of developing local capability. Given the current shortage of useful information, attainment of this objective requires an adequate procedure for monitoring project activities, to provide data from experience which can be used to improve project design.

Involvement of pastoral communities in the development process is a key planning issue, but it is difficult to prescribe its optimum extent and timing. Participation of pastoralists has in fact been counterproductive on occasion, where exaggerated expectations have arisen and been subsequently disappointed. It therefore seems sensible to start by establishing limits to their involvement, perhaps by restricting initial participation to information exchange in a dialogical situation, and by distinguishing at given project stages between activities which require cooperation of the pastoral producer (such as animal health measures, firebreak and range water development, and stock route operations) and more global intervention operations. The extent to which pastoralists should be encouraged to participate financially in development is not known, and more precise information is needed on this issue.

Identification and incorporation of existing local socio-territorial units for the purpose of developing management capability is an exceedingly complex issue which requires precise definition of areas of management responsibility. It is desirable to identify a structure within the pastoral system which can be used as a contact point for exchange of information and for introduction of management functions, but a formal mechanism which is capable of assuming such responsibility may not always exist; suitable units will have to be constructed where this is the case.

In the end, the objective of helping the pastoralists to increase their productive efficiency will be pursued within a wider context of government and aid agency objectives. Governments are frequently concerned that interventions in pastoral areas should also be beneficial to other sectors of society which interact with the project, while financing agencies appraise them according to their individual financial criteria. Given this pragmatic consideration, an effective development plan would aim to arrive at a consensus of objectives among the three interest groups.

Ranch organizational structures

Lucas Ayuko

Virtually all African pastoral production systems have been faced with the same basic problem: traditional management practices, in being subsistence oriented, have however unwittingly, resulted in overstocking, overgrazing and resource degradation. Development interventions have had relatively little success in altering this management strategy. Nevertheless, they have brought into sharp focus the values and problems of permanent settlements, disease control, improved range and animal husbandry practices, and their dependence on proper range use. Because of their diversity and comparatively long duration, and because they have achieved some positive results, pastoral development projects in Kenya offer a particularly valuable opportunity to learn from past efforts to plan land use.

In the early 1940s, it had become obvious to the government of Kenya that the balance between land resources and livestock/wildlife numbers which had previously existed in range areas had been altered as a consequence of increased population pressures (both livestock and human) resulting from improved animal health services and more amiable relations between tribes. From this time on, various programmes were introduced in an effort to control the use of the land. Early interventions were based on the recognition that pastoral development had to start with the land tenure problem. They consisted of grazing schemes, established under the general principles of stock limitation, rotation of grazing, and payment of grazing fees, individual ranches, and demonstration ranches, such as Konza Demonstration Ranch. Commercial ranches, which had already been in existence for quite some time, dating as far back as the European settlement in 1902, were given further support by the colonial government just after the Second World War. Cooperative society ranches were later introduced in the early 1960's.

The coming of independence in 1963 witnessed a "back-to-the-land" movement involving large resettlement schemes, which necessitated the design of a comprehensive range programme. It had been proven during the 1950s that a very good standard of farming could be built in both high-potential and range areas; the government and people of independent Kenya had only to agree the standard to be maintained. It had also been learned that efficient land use was not possible without considerable capital investment, without the good will of project beneficiaries, and without land registration supported by legal sanctions, combined with an effective credit system and soil conservation measures. The range programme, formally established in 1968 as the Kenya Livestock Development Project, provided for the development of various ranching organization and range management structures: commercial ranches, cooperative societies, and individual and company ranches[1] in the high-potential range areas; group ranches[2] and grazing blocks[3] in the pastoral areas. These interventions addressed the land use problem in terms of local institutions, social structures, and specific area requirements, some reflecting particularly careful efforts to preserve the integrity of existing institutions while attempting to

adjust them to modern means of production, in which moderate success has been gradually achieved.

1. Company ranches in Kenya are demarcated on formerly unused government land. Capital for the purchase of stock and development of infrastructure is raised by the sale of equity shares and government loans. Beef production is carried out on a commercial basis under the supervision of a salaried resident ranch manager.
2. A group ranch is demarcated from tribal grazing land, with the resident pastoralists designated as owners. They form a management committee, and title deed to the ranch enables them to qualify for government loans to finance the development of water sources and other infrastructure. Formal ownership is expected to confer a sense of responsibility for the long-term upkeep of the land, which would include a willingness to control grazing.
3. A grazing block is a delimited pastoral area where formal land tenure reform is not proposed for the immediate future, but where some investment is made in improved water sources and other infrastructure. A system of rotational grazing is designed and overseen by a government grazing manager.

One of the most significant lessons arising from the experience of these projects is that the alleged ultra-conservatism of pastoralists towards proposed technological interventions is more appropriately viewed as prudence. Pastoralists welcome modern technology when they perceive its beneficial relationship to the basis of their economy and culture, and they will accept change at their own pace, if it is introduced under their control, that is, initiated and directed by senior elders who are aware of the advantages the proposed change will bring, and provided it does not undermine their established culture. The form of the intervention, the manner and timing of its application, the age group to whom it is directed, and the benefits expected, will determine their acceptance or resistance. The desire to preserve social cohesion being as important to pastoralists as considerations of economic benefit, an intervention should be designed to maintain rather than threaten the established social order, and to be perceived as such. Similarly, administrative structures must be set up in terms of local rules and customs so as to preserve communal integrity. Familiarity with the national language and local power structures on the part of development agency staff is also advantageous in obtaining the cooperation of the pastoral community. In sum no development measure can be expected to be effectively applied without identification of and respect for the existing social structure and territorial organization.

Project experience in Kenya has also brought into clear view the futility of range development in the absence of sufficient pre-development information and control over livestock numbers. To this end, the design of both pastoral and commercial production structures requires systematic pre-development analysis, which should include the following:

1. a survey of the total resource, including evaluation of land condition and potential and classification into ecological zones; and data on human and livestock populations;
2. analysis of socio-cultural aspects of the traditional grazing system with which the planned intervention will be integrated;
3. where appropriate, enactment of legislation to allow adjudication of group landholding rights and the issuance of land title, to provide security for loans and a basis for legal action in case of mismanagement;
4. collection of information on livestock distribution, herd composition, and demand patterns, for marketing development purposes;

5. identification of available water sites, and estimation of the cost of their development;
6. where sizeable wildlife herds exist, description of their essential features and estimation of possible tourism value and by-product harvesting potential, with the objective of achieving optimal compatibility between livestock and wildlife;
7. investigation of sources and forms of finance, and of other related inputs such as education, communications and community requirements.

In addition to pre-development surveys of the total resource, the development programme must include training programmes—formal and informal—at all levels, to provide staff to implement the programme. Implementation should be based on economic and ecological criteria; it should assume a management orientation based on advice, persuasion, and demonstration of efficient methods of resource management and husbandry. It must also be supported by a structure adequately authorized to implement approved development plans, and to provide management expertise and guidance to local people and community leaders. The development plan should include the establishment of permanent study plots in each of the main land units, to provide long-term monitoring of range conditions and trends. Development-oriented research is also important. This should cover grassland ecology, grazing management, bush and disease control, livestock improvement, and wildlife management. As implementation progresses, studies could be undertaken on the impact of development as affected by environment, animals, human beings, and vegetation.

It is evident from the Kenyan experience that a range development policy should be oriented toward the convergence of national interests and pastoralist objectives, and that success in these terms depends on suiting the form of the project to specific conditions in a given range area. Thus, individual or group ranches are appropriate for high-potential grazing areas, while nomadic grazing would seem to make the most economic use of the poorest rangeland. At the same time, the intended structure must be viewed as subject to change overtime, and provision for adaption to changing conditions incorporated into its design.

The evidence also indicates that evaluation of the success or failure of projects requires a long-term perspective. Interventions which failed to attain their immediate objectives nevertheless planted the seed of change in the minds of pastoral people, which, over time, induced some modification in their behaviour. Even so, lack of effective control over livestock numbers remains the most serious constraint. In the long term, it would appear that development of pastoral areas can only be realized by increasing integration of nomadic groups into the non-pastoral majority of the population, as sedentarization resulting from range control programmes brings about their gradual awareness of the finite character of the range resource, and a consequent change in their management practices.

Discussion

In response to the author's concern for the impact of projects on social continuity, a number of comments were made on the implications of this topic for the design of production structures. Pastoralists can perceive projects as threatening to their social order; in this context, their "conservatism" is not obdurate resistance to social change but an attempt to regulate the rate of its occurrence according to the capacity of existing social institutions to absorb new operational approaches, so as 'to void social dislocation. Another potential source of disruption lies in the fact that any major development initiative offers an opportunity for economic benefit which may be used to greater advantage by the more educated and enterprising participants, with the result that the least privileged may realize the smallest gain from the project. Also to be

considered is the possibly competitive effect of different production structures in a multi-component project. Where group and individual ranches, for example, occur in approximately adjacent locations, their operations cannot be assumed to be compatible. It is, of course, possible for individual ranch units which are not viable in terms of management to be combined as a group unit for management purposes; in some situations, mutual social and economic interests will be more efficiently served by such an arrangement. In project design, then, anticipation not only of the potential for cooperative assistance but of possibly divergent interests among components will help in devising a plan oriented to maintaining social continuity.

Considerable attention was given to evaluation of project financing methods, in particular to the usefulness of credit, to the difficulties in effecting repayment, and to the effect of land reform on repayment response. Pastoralists are by now generally willing to accept registration of land and granting of local title as a means of obtaining collateral for borrowing, and, with few exceptions, to accept loans for development purposes; in fact, it would be desirable for them to be less dependent on credit and more inclined to invest their own resources, but so far they have been reluctant to take this risk, and land reform measures have not encouraged them to be less reticent in this respect. More precisely, it cannot be assumed that granting of land title as a basis for extension of credit will lead to rapid development of a commercial attitude, or to responsible management or repayment of loans, which remain largely a matter of individual initiative. Still, where severe mismanagement exists, foreclosing on land in order to effect repayment should be the method of last resort; improvement in management practices is the preferable approach, perhaps by creating an agency for this purpose.

Credit may have greater utility in financing incremental development as opposed to new and large-scale projects such as company ranches, which require heavy long-term capital investment at high risk, but where; there is limited capacity for local participation due to lack of experience and a prevailing non-commercial orientation. Credit financing would appear to be least viable for the arid and undeveloped areas of East Africa, and it should be extended in limited amounts for limited purposes. Alternatives to over-reliance on credit should continue to be explored. One such solution, the Ankole ranching scheme in Uganda, offers an example of the sensible application of credit in conjunction with government investment. In this programme, initial capital inputs by the government for infrastructural support mollified cash flow and incentive problems in mobilizing and capitalizing individual ranches.

With regard to the appropriateness of specific structures, it was felt that demonstration projects should be avoided as too resource-consuming for governments. Formal demonstration structures, such as Konza Demonstration Ranch, have certainly been useful in obtaining pastoralist interest and support, but improved practices can be more efficiently demonstrated within existing economic units not owned by government, using a trial-and-error approach.

It was acknowledged that there is a correlation between land occupancy formalized by land tenure: adjudication and efficient resource management. Group ranches, in which a group of people jointly have freehold title to land, are more easily operated than grazing blocks because the former encompass smaller, land areas and have more sedentarized populations, which makes it possible to maintain continuity of contact with local people. Grazing blocks, on the other hand, cover wide territories in which occupancy is not formalized, with the result that local contact is unstable due to greater population mobility. In any case, local circumstances will generally determine the extent and form of the land reform measures required.

Coordination and management

Larry Ngutter

Destined to reach a widely scattered rural population in often remote areas, pastoral development projects are usually quite complex due to the multiplicity of their components, to the paucity of reliable data, and to the number of official departments and agencies involved in their execution. In seeking to bring into harmony the often widely divergent interests involved, coordination and management serve to direct and improve project implementation. These devices allow correction of planning errors as the project is put into operation, enable subsequent project phases to be prepared on a more reliable data base, and facilitate allocation of responsibilities and resources to the various implementing agencies.

The principal functions of project coordination are: (a) to ensure that the various project implementing agencies work in union toward the achievement of stated objectives, and that they promptly deliver the required inputs; (b) to provide a forum for donor agencies to share views on methods and progress of project implementation; (c) to regulate the timing of the various project activities, such as procurement of supplies and construction of structures, by determining priority inputs; and (d) to facilitate communication and prompt transmission of information between head office and field. With the exception of donor coordination, these functions should be the responsibility of a specific unit of government or implementing agency designated by government for this purpose.

The coordinating unit may be organized in different ways, for example as (a) a parastatal authority which oversees all implementing agencies and requires legal and perhaps treasury sanctions, (b) a strengthened existing or newly formed government ministry or department, or (c) a small body of individuals reporting to a senior government authority but lacking its own executive powers. Experiments with these forms of organization in Kenya, represented respectively by The African Land Development Board, The Integrated Agricultural Development Project, and the Kenya Livestock Development Project, indicate that if project coordination is to be effective, the coordinating unit must either have its own executive powers or form a section of an executive operational department or division of the public administrative structure. Its rank within government is critical to the success of the project, and it should be directed by an individual of adequate policy and administrative influence. It should also be institution-building, and be represented at every level of project implementation. Formal channels should be established to enlist the full cooperation of the implementing agencies, in particular by means of memoranda of understanding which specify implementation and coordination measures for the various project components, or by placing all implementing agencies and their associated staff and logistical support under the umbrella of one operating authority. Finally, effective coordination requires the allocation of sufficient resources. While technical assistance personnel are usually required at the outset of implementation, the responsibility for coordination should, as far as possible, be left to the nationals of the country concerned.

Coordination and management are mutually interdependent and reiterative in practice. Coordination aims to improve policies and procedures affecting project implementation, and to ensure implementation of components as agreed. Project management organizes the available resources so as to achieve project objectives, resources including land, people (project officials and beneficiaries), livestock and their production systems, and capital inputs such as water, animal health, livestock marketing, and other facilities. It is the role of project management to

clearly allocate responsibility for the implementation of project components to the various implementing agencies, and to resolve problems that arise during implementation.

A key issue in project management is the centralization or decentralization of management authority, that is, the extent to which decision-making powers can be delegated to those at the project locations. Experience in Kenya indicates that a large measure of head office-to-field decentralization is more likely to lead to successful project implementation, but that a high degree of centralization appears more desirable in agency-to-agency relationships.

Procedures and operational approaches which have been found in Kenya to be useful in project management include the following:

1. **Work plans**, published once every operational period, originating from the field level (project location), in which the activities planned by each implementing agency for that period are specified in physical terms. After assessment at several coordinating levels and final approval by the central coordinating committee, these plans form the operational plan for the period. The work plan for each operation phase includes evaluation of progress achieved during the preceding interval.
2. **A monitoring and evaluation sub-unit** of the coordinating unit, adequately staffed and equipped for regular data collection and analysis and for prompt return of findings to project management and to the fiend staff, to allow adaptation of activities.
3. **An internal supervision mission**, created form among senior project management officers, to compensate for the limitations of the supervision component presently required and staffed by donor agencies.
4. **Frequent meetings** over a set agenda between those concerned with implementation, at several levels of interaction, to help resolve problems and keep policymakers and project managers abreast of project activities. These would include meetings (a) at the headquarter level, between implementing agencies and donors, and donors of a multi-donor project, (b) at the project location level, among the various groups concerned, and (c) between the head offices and the field.
5. **Progress reports**, both for use in future project planning and to minimize difficulties arising from personnel changes midway in the project.
6. Use of **consultancies, short-term studies, and workshops**. Consultancies by experienced personnel, arranged for the purpose of explicating some of the unknown parameters which existed at the time of project conception, can h6lp to clarify the implications of implementing the project as originally conceived. Similarly, if a project component has been inadequately prepared, specific studies can be arranged to precede its implementation while the execution of other components proceeds. Regular or occasional workshops will acquaint the field staff with the objectives of the project, and keep the head office informed of project activities.

Discussion

The discussion brought into focus the interrelationship of coordination and management as simultaneous activities which aim to ensure effective implementation but which occur at different levels of operation. The former is primarily a liaison activity directed at minimizing problems and misunderstandings in matters of policy, by precisely defining responsibilities, clarifying functions, and correcting errors of judgement, while the latter occurs as essentially a field activity of the individual implementing agencies.

It was generally agreed that some degree of coordination is necessary to shorten the decision-making process and to facilitate timely implementation, but that coordination also has its limitations. Formal lines of control cannot completely eliminate clashes and disagreements, and overemphasis on the "organization chart" and on the creation of agencies which cross interdepartmental lines may result in an excessively rigid structure which causes more problems than it solves, so that coordination becomes "crisis management" and defeats its own objective. To be effective, coordination must be supported by adequate authority, staff, and control of dispensation of project resources, and it requires harmony between project procedures and existing politico-economic structures, as well as minimal reliance on expatriate management. But in addition, the need for coordination must be minimized. This may be accomplished by establishing discrete projects, preferably separately funded, but if co-financed, under an arrangement which designates a chief donor as *chef-de-file* at the outset.

There were differing views concerning the structure and function of the coordinating mechanism. The structure of this device and the degree of autonomy it requires are functions of the project stage and of the stage of development in the country concerned. Delay and confusion can result if the method of coordination is inappropriate to the given circumstances. In the more developed countries, a central executive agency may be more advantageous at the beginning of a project, followed by decentralization into discrete units, each charged with separate functions and accounts. If appropriate government departments already exist, and have the confidence of the central policy-making authority, they can function independently without the need for a new and separate coordinating structure. Centralized coordination is also useful for establishing consistent accounting procedures for efficiency and compatibility in expenditure recording, and is appropriate as well where coordination of agencies is required, since this would necessitate a greater degree of supervision. In less developed countries, on the other hand, initial coordination should probably be loosely structured, control being intensified as experience develops.

Except in small, easily overseeable areas, project supervision by coordinating committee has resulted in delay and inaction because meetings between high-level officials having the necessary decision-making powers are infrequently held, the committee being usually represented by junior-level officials without decision-making authority. This can be avoided if the responsibilities of the committee are clearly defined from the beginning, and if provision is made to enable all but the most critical issues to be resolved prior to central committee meetings. A successful solution has been devised in Botswana, where the coordinating committee consists of several decision-making levels for the purpose of sorting out priority issues.

Attention was also given to the often critical role of the local government representative in effecting project implementation, especially as it involves control over financial inputs for local administration. In view of the fact that government administrators are not always well conversant with the aims of the project, it would be useful to devise methods of strengthening government administrative structures at the project level; this might include allocations to improve their efficiency.

Non-formal training

Manpower and training

Eric Hall

In third world countries, manpower development and training procedures are too often inappropriate to their development requirements. Education and development are generally separate monolithic structures, and their operation as independent and costly enterprises distracts scarce resources from development priorities. The needs of these countries would be more effectively served if education were pursued within the context of development. This requires a training concept and methodology which can be efficiently and economically applied at all development levels, rather than the large-scale institutional education programmes currently regarded as the springboard for progress.

Education exists not only as **formal education** (general in scope, structured, and pursued in an institutional setting) but also as **informal education** (generalized learning by exposure in an informal setting) and **non-formal education** (designed to provide information on specific topics to identified groups, in order to meet perceived needs which have been identified through dialogue). All human beings are educated, by one or another of these learning systems.

As illustrated diagrammatically, informal education provides a solid base of knowledge and skill which, in fact, accounts for a high percentage of the total knowledge and ability acquired in life. A person's level of performance is governed by the greatest gap in his knowledge (represented by the lowest valley in the diagramme). Non-formal education is designed to correct the specific informational deficiencies which reduce overall effectiveness; by means of dialogue, it determines the level of existing knowledge, then identifies the critical shortfall in knowledge, and remedies the defect by focused training in a practical context. Quite limited and relatively inexpensive inputs of information can thus significantly improve overall performance.

While all three learning systems are important, neither formal nor informal education can guarantee effective practical contribution. Formal training can never succeed in accurately identifying the needs of the man to be placed in the field; whereas the person whose education has been largely informal may not regard his knowledge as useful and so likewise fail to contribute positively. Training therefore requires an input which allows the individual to use what he knows effectively, regardless of how he has been educated. The first essential of training is, then, to enable the individual to learn and to have confidence in what he knows, and to expand his potentialities so that he may effectively participate in affairs. This can be accomplished by non-formal education, which will allow the individual to expand to the limits of his capacity, identifying in the process the most pressing training requirements, which can then be met by providing the appropriate information. The second essential for successful training is therefore careful recruitment of those who have considerable capacity for growth.

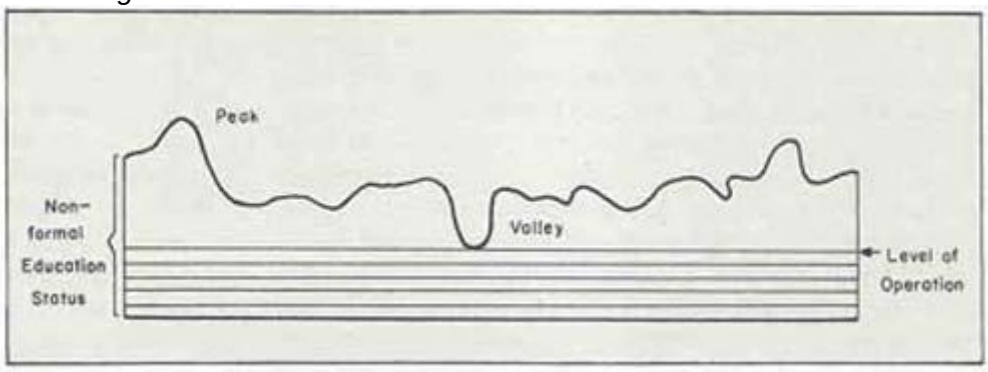
The higher management levels constitute the most important training field, because questions raised at these levels automatically point to overall manpower and training input requirements. Training and manpower development should, however, be broadly planned to cover needs at all levels. Indeed, a development project is essentially a training operation which requires the application of non-formal methods of learning at all organizational levels, from senior policy-

makers to field staff. The proposed training curriculum is not the "A to Z" of a particular subject, but a progressive process involving the creation of a dialogical situation, or **research dialogue**, which will expose all relevant latent knowledge and identify informational needs and training requirements while coincidentally introducing the technical proposal of the development plan. This exchange, which makes practical use of non-formal and informal learning methods, is research at a down-to-earth problem-solving level.

In general, the research dialogue relates to a training frame of mind. More specifically, its objectives are the following:

1. of first priority, to establish a learning situation in which existing knowledge is made generally available;
2. to encourage each participant to expand his capacities, which will expose where further training is needed and identify the limits of his potential;

Level of knowledge related to non-formal education status.



3. to create a framework of reference (Gestalt) or picture of the entire field of endeavour in terms of which project participants can understand their roles and the relationship of each training input to the operation as a whole, so that in perceiving the importance of their contribution to the total scheme they have the opportunity to develop their own positive initiatives.
4. to identify lively and even daring approaches and ideas which will dynamize the training programme.
5. to give priority to recruitment and training of top-level personnel;
6. to establish priorities of interest in order of simplicity of achievement, the entire field programme becoming operational once one simple priority is agreed upon.

In pastoral projects, this method will involve creating an initial dialogical situation in a workshop setting, in which those responsible for implementation appraise the total development situation and work toward a shared understanding of project aims and priorities. Improvement in the pastoral environment would be regarded as the training curriculum, and the dialogue would aim to determine what needs to be done in order to effect this improvement, taking care to include a dimension which would encourage pastoralists to accept and cooperate in the project. Sample issues which might be used to create a training situation in a workshop for a pastoral development project are:

- Is range deterioration caused by overgrazing, or by overtreading as animals move to and from water (i.e. is it the mouths or the feet which are to blame)?

- What is the relative range impact of each species? Is there a need to think separately about measures required for each group of animals; e.g. what would be the effect if all cattle were zero-grazed and their hooves thus removed from the rangeland? Should the goat be blamed for erosion more than other species?
- Is restricted installation of water points a negative approach to range conservation when control of the abuse of water points is in fact the problem to be solved?

This initial appraisal will provide the basis for a dynamic and technically sound field training programme to be taken out to all project levels. It will create the Gestalt for those at management level, and establish the priority need which will animate the field programme.

Creation of an effectively functioning field programme is the most efficient way to realize implementation of a project. Such a programme, in which the instructional method combines education by exposure and contact with simple non-formal educational inputs, will provide a training ground more appropriate for the development of pastoral areas than lengthy instruction in an artificial classroom situation. If new recruits are put directly into a well-functioning field operation in which those responsible for development regard themselves primarily as trainers, and if the requisite infrastructure is planned and provided in parallel with (not after) training activities, then project implementation and training proceed interdependently, as they should. Education is thus realized within the context of development, and the need for expensive, long-term and absentee formal training is avoided. Projects operated in this way, at a rate appropriate to the country's needs and capacity to absorb them, toward open-ended and modifiable objectives, would be far more effective and cost-efficient than projects as they presently operate.

Discussion

The kind of scaled-priority in-service training programme described in the paper has been successfully employed in development, notably in pre-independence Kenya and more recently in a rinderpest vaccination campaign in Yemen, in the course of which a nucleus of largely inexperienced people were trained in animal vaccination methods in a field situation within four to five days. Field training need not be limited to a single skill, but can be directed toward the development of multiple capability.

Referring to the fact that in areas where a high proportion of human illness is related to animal diseases a serious constraint may be imposed by lack of brained medical and veterinary personnel, the question was raised whether in pastoral projects it might be possible to offer simultaneous training in the techniques of both animal and human health. It was widely agreed that limited and local training in human health measures; is ill-advised because of the grave practical, legal and ethical risks involved, but that the immediate and critical problem of the impact of animal disease on human health should receive early and substantial attention.

It was also acknowledged that manpower selection and training must be pragmatically oriented and should focus on development of management capability. Initial management training should take place in a field situation in the country in which the project is located; subsequently, training horizons can be widened in other settings, such as specific training programmes for project managers. Development simulation exercises might be valuable training devices in these programmes. Given the importance of transferring management responsibility to local groups,

attention should also be given to attracting members of the pastoral community to serve in administrative roles.

Most livestock problems being the immediate concern of stockowners, training must provide useful knowledge and skills to pastoralists themselves. As their needs are at this point little understood, their training must begin by identifying, through dialogue, the level of their existing relevant knowledge and their information requirements. It should then be determined at what particular stage of development their training needs can be most appropriately met. The training of pastoralists should aim to augment their traditional skills by introducing practical information appropriate to their identified needs.

Project monitoring

Monitoring: some notes on concepts and a programme

Neville Dyson-Hudson

The contrary outcome of most livestock development projects reflects errors either in understanding of how the projects operate or in expectations of being able to contrail them. Monitoring, as a method for attempting to understand the behaviour of complex and dynamic systems by selectively observing their processes over time, is one way to elucidate how projects actually operate on the ground, so that more effective project, may then be designed.

Monitoring is distinguishable by a systems approach, by increasingly selective reduction of parameters used to identify key relationships, by interaction between data acquisition and model building, and, in the context of the pastoral system, by integration of parameters relating to human population, livestock population, and natural environment into an overall description of livestock production. This integrated approach requires an interdisciplinary framework, which in turn presents complex organizational demands because different scientific disciplines have different time horizons for investigation, different required data levels and modelling habits, and different capabilities for objectifying or simplifying complex states or processes.

Establishment of parameters for each of the production system components is variably difficult, but it is especially problematic for human factors. Identifying dimensions of human behaviour which might be objectively represented invariably calls attention to other sets of interrelated parameters which may require investigation. Limiting the number of human parameters treats production units as static, when they characteristically disperse into a varied number of management units having complex decision-making characteristics. Any effort at description of processes vital to the production model therefore runs the risk of ignoring a number of crucial parameters.

If it is difficult to find objective measures for human organization and behaviour, it is even more difficult to reduce the material to the same proportions required for modelling the rest of the system. Integrated monitoring within a systems framework encounters the difficulty that while numerous parameters exist within the livestock production system which require in-depth investigation because next to nothing is known about them, these parameters must somehow be reduced in the interest of efficient and useful handling of data. At this point, selection of

parameters for initial investigation is based largely on intuitive arguments concerning the usefulness of any parameter for project design. A more solid basis for determining the relevant parameters must eventually be found, but meanwhile, an initial start in this direction may be made by constructing a simplified version of the pastoral production system on the basis of a limited number of features about which some knowledge exists (viz. social organization, herd structure, human too livestock ratios, herd productivity, smallstock function, organization of livestock management, decision-making patterns, and feeding strategy).

Initial enquiry which appropriately expresses and handles such human organizational features is on roughly the same scale as that required to determine environmental and livestock dynamics in the system, and can provide a basis for indicating changes of state, whether induced by development projects or otherwise. It should be especially useful for assessing the effects of projects on pre-existing production systems because it covers many of the features which projects intend to change or which will change as a consequence of intervention.

ILCA is currently attempting to test this form of enquiry as an initial approach to acquiring information on livestock production system processes which can be used to develop a systematic monitoring methodology applicable to any livestock development project. This points to the need to test the validity and utility of the: concept of monitoring for such projects; if the concept is found useful, efforts should be made to simplify monitoring techniques for transfer to local, permanent, and cost-efficient operations; if its value appears questionable, its lack of usefulness should be demonstrated, and research pointed in a more profitable direction.

ILCA monitoring activities

Poul Sihm

Monitoring structures recently introduced into pastoral development projects have not been adequately designed to measure the impact of intervention. It is necessary to develop a monitoring methodology which will indicate with precision the causes of project failure and the effects of project success.

Project failures may in part be related to paucity of factual information on which to base project design; to the assumption that technical innovations designed for similar environments could be directly transplanted between dissimilar contexts; to the persistence of myths concerning pastoralist behaviour and to the romanticism of earlier studies which lacked the perspective of an interdisciplinary approach; to one-sided emphasis on technical assistance as a means of accomplishing development; and to encouragement, by developers, of government attempts to control pastoralism, including largely futile efforts to settle the pastoralist, regardless of the fact that this means destroying the most valuable aspect of pastoralism—its mobility and flexibility in the utilization of a marginally productive land resource.

The main difficulty in determining why negative development has resulted from well-intentioned large-scale experiments, however, is that so far no method has been devised for measuring change over time in the crucial parameters, so that there is no way of knowing what is being changed by a given development intervention. Monitoring components recently introduced into pastoral projects have been limited to the application of conventional management monitoring, which involves elaborate reporting requirements but gives no indication of the probable causes of negative results. At the same time, existing data are insufficient to allow the detection of

change in socio-economic, animal production, and ecological parameters, so that it is not possible to ascertain the effects of a project when its components do proceed according to plan.

The ILCA monitoring research programme currently under way in Kenya is intended to develop and test a methodology which will indicate causes when projects do not proceed as intended, and their effects when they do. Research investigations are proceeding in three group ranching units representing a single culture and located in a similar environment; this should allow assessment of the effect of relative development rates on production system features in a fairly structured and integrated fashion, and testing of the elementary assumptions concerning production variables from which the rationale for much development intervention design has been derived. The control limits of this single form will then be expanded to include other production structures (grazing blocks, company ranches), leading eventually to controlled comparison of several development forms in Kenya and ultimately to comparative analysis of livestock production processes elsewhere. Testing of approaches developed infield research under different development conditions should lead to the design of an accurate and cost-effective procedure applicable to any livestock system. The methodology obtained, which will apply to monitoring of both development and pre-development phases, will be made available to interested governments following completion of the research programme; the management monitoring part will be available in draft at the end of 1980.

A brief outline of the ILCA research programme is provided, covering organizational aspects, work methodology, procedures for data analysis and modeling, anticipated publication of results, and financing. Emphasis is placed on development of a methodology for the systematic collection of project impact data, which will then be used to examine organization and management factors as an assumed major determinant of project success or failure. Maximum involvement of government authorities in monitoring field work at an early stage is anticipated in order to promote the creation of a self-sufficient nationwide monitoring capability, and ultimately to provide governments with their own means of designing and implementing better livestock projects.

Discussion

In Africa, the uniquely changeable, complex, and diverse characteristics of pastoral areas and their production systems which have so confounded the design and implementation of pastoral projects have also rendered the monitoring of these projects especially problematic. Even in regions of the world where conditions are less complicated, past monitoring endeavours; have usually been excessively detailed, too costly, and lacking in follow-up efforts. More important, they have not provided for collection of impact data, without which monitoring is of limited usefulness. In view of its questionable, albeit brief, history of achievement, monitoring can appear to have been carried out more as an academic exercise than as an instrument for facilitating) development.

Monitoring, as a device for following the implementation and measuring the impact of projects, must complement and facilitate the attainment of project objectives. It must be planned with these objectives clearly in view: that is, it must ultimately provide information which can be used to create livestock projects which will be more efficacious in improving pastoral livestock production systems. For this purpose, it is necessary not only to test and to perfect a methodology for data collection and analysis which can be used to clarify how projects actually operate and to precisely determine their effects, but to ensure rapid feedback of results to all

executing and decision-making levels, including producers, for efficient application of its lessons to the execution of ongoing, and the conception of new, projects and programmes.

The generation of information, as the first product of monitoring, can, it is well known, be vastly resource consuming. It is essential to control costs and time involved by making monitoring as simple (that is, as elementary) as possible. In fact, monitoring must operate as projects must operate: as a low-cost, simplified, and long-term undertaking which will be sensible if its expected benefits exceed its costs. Very detailed investigations are of limited value in the pastoral area, not only because so little. is known about the systems to be monitored but because data management in such studies becomes expensive, time-consuming, and distracting to management, with the consequence that limited resources are diverted from primary project objectives and feedback of results is delayed. It therefore seems preferable to begin with a simplified system which, by reducing the scope of the variables under investigation to a manageable number of parameters, would allow for rapid processing of information obtained, thus enabling monitoring to perform its intended function. Any simplified system the results of which are proven useful can be perfected in the light of further knowledge gained.

Development of an effective monitoring system would involve description and understanding of important existing pastoral systems, development and synthesis of modeling techniques and models (that is, alternative pastoral production system designs), and testing and validation of these alternatives. Such investigations would assume as prerequisites the existence of sufficient baseline information to enable a grasp of constraints and potentials, and the expectation of establishing a casual relationship between factors being measured and inputs. Monitoring also requires a systematic and interdisciplinary approach which acknowledges the interdependance of aspects under investigation. Subjective monitoring, as complementary to objective studies, may also be useful in simplifying the monitoring process: it is not invaluable simply to ask people what benefits they think they are getting. A social science perspective, which incorporates this subjective element in sustained on-site observations over a period of time, is in this way uniquely useful in apprehending the impact of social system dynamics on production/projects.

In any project, aspects to be monitored should include investigation of plant and natural environment dynamics, parameters of livestock production (such as animal population, birth/offtake rates and intervals, purchases/sales, etc), and human dynamics. Monitoring of costs of project activities is also extremely important enabling the cost/benefit ratio of the project and its components to become apparent. Organization and management studies, which examine the characteristics of human behaviour in large organization in terms of the power realities existing between different interest groups, would also appear to be useful as a monitoring instrument in pastoral development.

Casual attribution is perhaps the most problematic issue in monitoring design. In a highly fluctuating environment, it is exceedingly difficult to measure the effect of a project on the environment, on animals, and on human beings. Once sufficient data have been collected, the reasons for changes of state should become more readily apparent; it should then become less difficult to attribute changes of state to project effects, and easier to minimize their disturbing impact. Nevertheless, the explication of changes eventually detected in the system being monitored remains a difficult issue which should merit special consideration once adequate baseline information is available.

Accurate data collection techniques must be devised by testing and comparing different methods in order to arrive at those which are maximally transferable (adaptable) to different circumstances. Again, transferability is anticipated once sufficient data are at hand to provide a basis for useful generalization. Techniques used in other fields of investigation may be appropriated if they are found useful in the pastoral development field.

Concerning the participation of project managers in monitoring operations, it was observed that some types of data can be (and are) routinely collected by management as part of ongoing project activities, but that it is counter-productive to involve management extensively in detailed research to the extent that this interferes with flexibility by adding to an already burdensome workload, or leads to the creation of wasteful bureaucratic structures which distract resources from fundamental project goals. It should be more precisely determined which monitoring activities can be appropriately undertaken by management, and which are better pursued independently—by outside agencies, in universities, by field staff, or by creating separate bodies for specific monitoring purposes located outside the project.